

Laporan Tugas Kecil 1

Algoritma Brute Force

Dibuat untuk memenuhi tugas pada mata kuliah Strategi Algoritma IF2211 Semester
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Oleh

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1. Algoritma Brute Force pada Word Search Puzzle

Diberikan Word Search Puzzle seperti gambar berikut.



Algoritma Brute Force:

Mula-mula program mencari dari huruf paling pertama pada Puzzle yaitu huruf J. Salah satu penerapan Teknik Heuristik pada Word Search Puzzle ini adalah program membandingkan huruf tersebut dengan huruf pertama pada kata yang dicari. Jika tidak sesuai, program melewati huruf tersebut dan melanjutkan ke huruf kedua pada Puzzle (ke kanan). Jika sesuai, maka program mulai membandingkan huruf kedua, ketiga, hingga seterusnya dengan huruf yang ada pada Puzzle dengan titik acuan perbandingan yaitu huruf J tadi. Apabila tanpa Teknik Heuristik, program tetap melanjutkan perbandingan huruf kedua dan seterusnya sehingga pencarian membutuhkan waktu yang lebih banyak. Urutan arah perbandingan dari algoritma ini adalah kanan, kiri, atas, bawah, kanan atas, kanan bawah, kiri bawah, dan kiri atas. Namun, sebelum membandingkan huruf-huruf pada Puzzle, program awalnya mengecek apakah panjang kata yang dibentuk dari huruf-huruf pada arah tersebut dapat memenuhi panjang dari kata yang dicari. Apabila tidak, program tidak membandingkan huruf pada arah tersebut dan memilih arah lain. Setelah membandingkan huruf dengan semua arah dan masih belum menemukannya, program melanjutkan pencarian ke huruf selanjutnya dari Puzzle lalu mengulang kembali langkah sebelumnya hingga mendapatkan kata yang sesuai.

Contoh: Kata yang ingin dicari adalah JUPITER

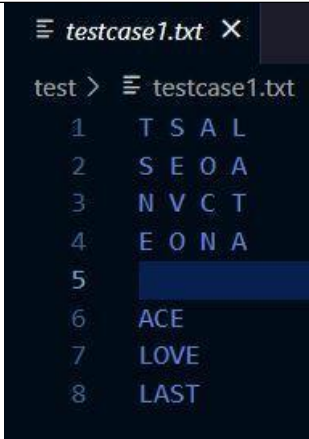
- Program memulai dari huruf J dan huruf tersebut sesuai dengan huruf pertama pada kata JUPITER
- Program melakukan perbandingan ke arah kanan. Saat mendapatkan huruf S dan tidak sesuai program berhenti melanjutkan perbandingan untuk arah tersebut.
- Program tidak akan melakukan pengecekan ke kiri dan ke atas karena panjang tidak sesuai.
- Program melanjutkan ke arah bawah dan belum mendapatkan kata yang ingin dicari.
- Program tidak melakukan perbandingan ke kanan atas.
- Program melakukan perbandingan ke arah kanan bawah dan hasilnya tepat sesuai dengan kata yang dicari.

2. Source program yang dipilih

Pada Algoritma Brute Force kali ini, dipilih bahasa pemrograman Java dalam implementasinya.

2. Screenshoot yang memperlihatkan input dan output

Screenshoot output yang ditampilkan adalah Algoritma Brute Force dengan Teknik Heuristik.

No	Input	Output
1		

2

```
≡ testcase2.txt X
test > ≡ testcase2.txt
1  T W Y L
2  L A U A
3  O P S T
4  E O N A
5
6  AS
7  UP
8  US
9  OPS
```

```
-----
Word Search Puzzle
With
Brute Force Algorithm
-----
Made By
13520160 Willy Wilsen
-----
Input your Word Search Puzzle filename (.txt): testcase2.txt
Your file processed successfully.
-----
Given Puzzle
-----
T W Y L
L A U A
O P S T
E O N A
-----
Searched Words
-----
1. AS
2. UP
3. US
4. OPS
```

```
-----
Search Result
-----
1. AS
- - -
- A -
- S -
- - -
Execution Time: 14 ms.
Total Letter Comparison: 12 times.

2. UP
- - -
- U -
- P -
- - -
Execution Time: 15 ms.
Total Letter Comparison: 14 times.

3. US
- - -
- U -
- S -
- - -
Execution Time: 16 ms.
Total Letter Comparison: 11 times.

4. OPS
- - -
- - -
O P S
- - -
Execution Time: 8 ms.
Total Letter Comparison: 11 times.
```

3

```
≡ testcase3.txt X
test > ≡ testcase3.txt
1  T W P L
2  L I A A
3  O L Y L
4  E L O A
5  |
6  LAW
7  WILL
8  YAP
```

```
-----
Word Search Puzzle
With
Brute Force Algorithm
-----
Made By
13520160 Willy Wilsen
-----
Input your Word Search Puzzle filename (.txt): testcase3.txt
Your file processed successfully.
-----
Given Puzzle
-----
T W P L
L I A A
O L Y L
E L O A
-----
Searched Words
-----
1. LAW
2. WILL
3. YAP
```

```
-----
Search Result
-----

1. LAW

- W - -
- - A -
- - - L
- - - -

Execution Time: 22 ms.
Total Letter Comparison: 29 times.

2. WILL

- W - -
- I - -
- L - -
- L - -

Execution Time: 28 ms.
Total Letter Comparison: 5 times.

3. YAP

- - P -
- - A -
- - Y -
- - - -

Execution Time: 17 ms.
Total Letter Comparison: 14 times.
```

4

≡ testcase4.txt X

test > ≡ testcase4.txt

```
1 J S O L U T I S
2 S U N A R U U A
3 N E P T U N E T
4 S O N I E I S U
5 R C E V T R E R
6 A H T R A E S N
7 M M E R C U R Y
8
9 EARTH
10 JUPITER
11 MARS
12 MERCURY
13 NEPTUNE
14 SATURN
15 URANUS
```

```
-----
Word Search Puzzle
With
Brute Force Algorithm
-----
```

```
Made By
13520160 Willy Wilsen
-----
```

```
Input your Word Search Puzzle filename (.txt): testcase4.txt
Your file processed successfully.
```

```
-----
Given Puzzle
-----
```

```
J S O L U T I S
S U N A R U U A
N E P T U N E T
S O N I E I S U
R C E V T R E R
A H T R A E S N
M M E R C U R Y
```

```
-----
Searched Words
-----
```

```
1. EARTH
2. JUPITER
3. MARS
4. MERCURY
5. NEPTUNE
6. SATURN
7. URANUS
8. VENUS
```

```
-----
Search Result
-----
```

```
1. EARTH
```

```
- - - - -
- - - - -
- - - - -
- - - - -
- H T R A E - -
- - - - -
```

```
Execution Time: 24 ms.
Total Letter Comparison: 63 times.
```

```
2. JUPITER
```

```
J - - - - -
- U - - - - -
- - P - - - -
- - - I - - -
- - - T - - -
- - - - E - -
- - - - - R -
```



```
Execution Time: 18 ms.
Total Letter Comparison: 9 times.
```

```
3. MARS
```

```
- - - - -
- - - - -
- - - - -
S - - - - -
R - - - - -
A - - - - -
M - - - - -
```

```
Execution Time: 16 ms.
Total Letter Comparison: 53 times.
```

5

 testcase5.txt Xtest >  testcase5.txt

```
1  J R A B B I T Y
2  S U N O G A R D
3  N S S T E N E T
4  S O N S E I S U
5  R U U A T A B R
6  A O N R I E S N
7  M T E R C L R Y
8
9  R A B B I T
10 M O U S E
11 S N A I L
12 A N T
13 D R A G O N
14 B A T
```

```
-----
Word Search Puzzle
With
Brute Force Algorithm
-----
```

```
Made By
13520160 Willy Wilsen
-----
```

```
Input your Word Search Puzzle filename (.txt): testcase5.txt
Your file processed successfully.
```

```
-----
Given Puzzle
-----
```

```
J R A B B I T Y
S U N O G A R D
N S S T E N E T
S O N S E I S U
R U U A T A B R
A O N R I E S N
M T E R C L R Y
```

```
-----
Searched Words
-----
```

```
1. R A B B I T
2. M O U S E
3. S N A I L
4. A N T
5. D R A G O N
6. B A T
```

```
-----
Search Result
-----
```

```
1. R A B B I T
```

```
- R A B B I T -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
```

```
Execution Time: 26 ms.
Total Letter Comparison: 7 times.
```

```
2. M O U S E
```

```
- - - - -
- - - - -
- - - E - - -
- - S - - - -
- U - - - - -
- O - - - - -
M - - - - -
```




```
Execution Time: 24 ms.
Total Letter Comparison: 55 times.
```

```
3. S N A I L
```

```
- - - - -
- - - - -
- S - - - - -
- N - - - - -
- - A - - - -
- - - I - - -
- - - - L - -
```

```
Execution Time: 29 ms.
Total Letter Comparison: 28 times.
```

6

 testcase6.txt test >  testcase6.txt

1 JCHILITE

2 EUNOGOLD

3 PSSTMPAT

4 AONAPIEU

5 ROTATOPR

6 GONRIEEN

7 MTERCLAY

8 AYZDQTRW

9

10 GRAPE

11 TOMATO

12 POTATO

13 PEAR

14 APPLE

15 CHILI

Word Search Puzzle
With
Brute Force Algorithm

Made By
13520160 Willy Wilsen

Input your Word Search Puzzle filename (.txt): testcase6.txt
Your file processed successfully.

Given Puzzle

JCHILITE
EUNOGOLD
PSSTMPAT
AONAPIEU
ROTATOPR
GONRIEEN
MTERCLAY
AYZDQTRW

Searched Words

1. GRAPE
2. TOMATO
3. POTATO
4. PEAR
5. APPLE
6. CHILI

Search Result

1. GRAPE

- - - - -
E - - - - -
P - - - - -
A - - - - -
R - - - - -
G - - - - -
- - - - -

Execution Time: 41 ms.
Total Letter Comparison: 49 times.

2. TOMATO

- - - - - T -
- - - - - O - -
- - - - - M - - -
- - - - - A - - - -
- - - - - T - - - -
- - - - - O - - - - -
- - - - -

Execution Time: 87 ms.
Total Letter Comparison: 14 times.

3. POTATO

- - - - -
- - - - -
- - - - -
- - - - -
- O T A T O P -
- - - - -
- - - - -

Execution Time: 43 ms.
Total Letter Comparison: 52 times.

7

≡ testcase7.txt ✕

test > ≡ testcase7.txt

```
1  JCHILITEANCJ
2  EUNOGOLDETYK
3  PSSTMPAZSDDA
4  AMNIPINUA EUS
5  ROUALOPRISDW
6  GMNNRVENUYNQ
7  MTUBILEYAWOP
8  AYZNITRRPAMW
9  DWTUNPAAWTAR
10 NMVSUYQLWP I I
11 PLKSMDFGPAD O
12 IUYDRETSAMLY
13
14 GOLD
15 SILVER
16 BRONZE
17 PLATINUM
18 DIAMOND
19 MASTER
```

Word Search Puzzle
With
Brute Force Algorithm

Made By
13520160 Willy Wilsen

Input your Word Search Puzzle filename (.txt): testcase7.txt
Your file processed successfully.

Given Puzzle

```
JCHILITEANCJ
EUNOGOLDETYK
PSSTMPAZSDDA
AMNIPINUA EUS
ROUALOPRISDW
GMNNRVENUYNQ
MTUBILEYAWOP
AYZNITRRPAMW
DWTUNPAAWTAR
NMVSUYQLWP I I
PLKSMDFGPAD O
IUYDRETSAMLY
```

Searched Words

```
1. GOLD
2. SILVER
3. BRONZE
4. PLATINUM
5. DIAMOND
6. MASTER
```

Search Result

1. GOLD

```
- - - - -
- - - - G O L D - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
```

Execution Time: 120 ms.
Total Letter Comparison: 20 times.

2. SILVER

```
- - - - -
- - - - -
- - S - - - -
- - - I - - -
- - - L - - -
- - - - V - -
- - - - - E -
- - - - - R -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
```

Execution Time: 58 ms.
Total Letter Comparison: 37 times.

8

≡ testcase8.txt X

test > ≡ testcase8.txt

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

```
13
14 WARRIOR
15 ELITE
16 MASTER
17 GRANDMASTER
18 EPIC
19 LEGEND
20 MYTHIC
```

```
-----
Word Search Puzzle
With
Brute Force Algorithm
-----
```

```
Made By
13520160 Willy Wilsen
-----
```

```
Input your Word Search Puzzle filename (.txt): testcase8.txt
Your file processed successfully.
```

```
-----
Given Puzzle
-----
```

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

```
-----
Searched Words
-----
```

```
1. WARRIOR
2. ELITE
3. MASTER
4. GRANDMASTER
5. EPIC
6. LEGEND
7. MYTHIC
```

```
-----
Search Result
-----
```

```
1. WARRIOR
```

```
-----
- - - - -
- - - - -
- - - - -
- - - - -
- - - - - W
- - - - - A
- - - - - R
- - - - - R
- - - - - I
- - - - - O
- - - - - R
- - - - -
-----
```

```
Execution Time: 105 ms.
Total Letter Comparison: 68 times.
```

```
2. ELITE
```

```
-----
- - - E L I T E - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
-----
```

```
Execution Time: 44 ms.
Total Letter Comparison: 8 times.
```

9

≡ testcase9.txt X

test > ≡ testcase9.txt

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

```
13
14 STRENGTH
15 WEAKNESS
16 OPPORTUNITY
17 THREAT
```

```
-----
Word Search Puzzle
With
Brute Force Algorithm
-----
```

```
Made By
13520160 Willy Wilsen
-----
```

```
Input your Word Search Puzzle filename (.txt): testcase9.txt
Your file processed successfully.
```

```
-----
Given Puzzle
-----
```

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

```
-----
Searched Words
-----
```

```
1. STRENGTH
2. WEAKNESS
3. OPPORTUNITY
4. THREAT
```

```
-----
Search Result
-----
```

```
1. STRENGTH
```

```
- - - - -
- - - - -
- - - H T G N E R T S -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
- - - - -
```

```
Execution Time: 37 ms.
Total Letter Comparison: 45 times.
```

```
2. WEAKNESS
```

```
- - - - -
- - - - -
- - - - -
- - - - S - - - -
- - - - S - - - -
- - - - E - - - -
- - - - N - - - -
- - - K - - - - -
- - A - - - - - -
- E - - - - - - -
W - - - - - - - -
- - - - -
```

```
Execution Time: 40 ms.
Total Letter Comparison: 145 times.
```

4. Alamat github repository kode program

<https://github.com/TubesForLyfe/Tugas-Kecil-1-Strategi-Algoritma>

Poin	Ya	Tidak
1. Program berhasil dikompilasi tanpa kesalahan (no syntax error)	v	
2. Program berhasil <i>running</i>	v	
3. Program dapat membaca file masukan dan menuliskan keluaran	v	
4. Program berhasil menemukan semua kata di dalam puzzle	v	