TÜRKİYE CUMHURİYETİ

YILDIZ TEKNİK ÜNİVERSİTESİ

BİLGİSAYAR MÜHENDİSLİĞİ BÖLÜMÜ

Algoritma Analizi
Proje

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Oyun Adımları

Ana Menü

```
Main Menu
1.Read From File Mode
2.Random Write Mode
3.Show Scores of Users
4.Exit
Selection : |
```

Oyun Menüsü Dosyadan Okuma

```
Main Menu
1.Read From File Mode
2.Random Write Mode
3.Show Scores of Users
4.Exit
Selection : 1
Enter the file name : data.txt
Enter the username : yigit

Board
-------------------------------------
   1   |       |       |       |       |
-------------------------------------
   2   |   3   |       |   3   |   1   |
-------------------------------------
       |   4   |       |       |       |
-------------------------------------
       |       |       |   2   |   4   |
-------------------------------------
   5   |       |       |       |   5   |
-------------------------------------

Game Menu
1.Play in Manual Mode
2.Play in Auto Mode
3.Back to Main Menu
Selection :
```

Dosyadan Okuma Otomatik Mod

```
Board
-------------------------------------
   1   |   1   |   1   |   1   |   1   |
-------------------------------------
   2   |   3   |   3   |   3   |   1   |
-------------------------------------
   2   |   4   |   4   |   4   |   4   |
-------------------------------------
   2   |   2   |   2   |   2   |   4   |
-------------------------------------
   5   |   5   |   5   |   5   |   5   |

Complete Time : 1.8
Gain Score : 150031.72

Main Menu
1.Read From File Mode
2.Random Write Mode
3.Show Scores of Users
4.Exit
Selection :
```

Skor Tablosu

```
Score Table
        Auto Game Mode
                Matrix Size:            +Size * 40000 Score
                Random Game Mode:       +100 Score
                Read File Mode:         +50 Score
                Undo:                   -0.001 Score
                Time:                   -Second * 10 Score
        Manual Game Mode
                Matrix Size:            +Size * 40000 Score
                Random Game Mode:       +100 Score
                Read File Mode:         +50 Score
                Undo:                   -2 Score
                Time:                   -Second * 10 Score

User yigit:         150031.00 Score
```
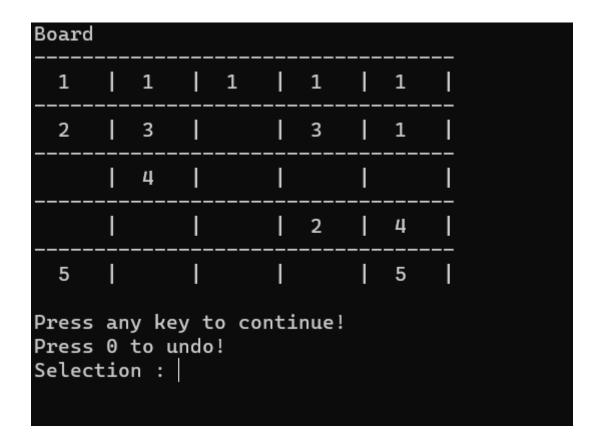
Manuel Adım

```
Board
----------------------------------------
  1   |  1   |  1   |  1   |  1   |
----------------------------------------
  2   |  3   |      |  3   |  1   |
----------------------------------------
      |  4   |      |      |      |
----------------------------------------
      |      |      |  2   |  4   |
----------------------------------------
  5   |      |      |      |  5   |

Press any key to continue!
Press 0 to undo!
Selection : 1
Enter the source row: 1
Enter the source column: 0
Enter the destination row(-1 to change source address): 3
Enter the destination column: 0
```
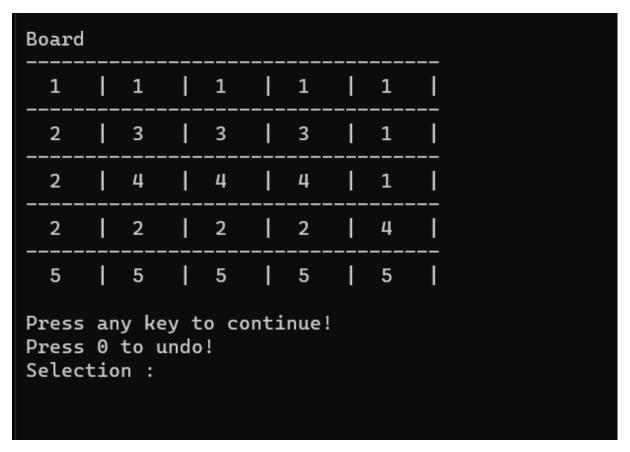
```
Board
----------------------------------------
   1   |   1   |   1   |   1   |   1   |
----------------------------------------
   2   |   3   |       |   3   |   1   |
----------------------------------------
   2   |   4   |       |       |       |
----------------------------------------
   2   |       |       |   2   |   4   |
----------------------------------------
   5   |       |       |       |   5   |
```

Manuel Modda Geri Alma

```
Board
----------------------------------------
   1   |   1   |   1   |   1   |   1   |
----------------------------------------
   2   |   3   |       |   3   |   1   |
----------------------------------------
   2   |   4   |       |       |       |
----------------------------------------
   2   |       |       |   2   |   4   |
----------------------------------------
   5   |       |       |       |   5   |

Press any key to continue!
Press 0 to undo!
Selection : 0
```

```
Board
-------------------------------------
  1   |  1   |  1   |  1   |  1   |
-------------------------------------
  2   |  3   |      |  3   |  1   |
-------------------------------------
      |  4   |      |      |      |
-------------------------------------
      |      |      |  2   |  4   |
-------------------------------------
  5   |      |      |      |  5   |

Press any key to continue!
Press 0 to undo!
Selection : |
```

Şartı Sağlamama Durumu

```
Board
-------------------------------------
  1   |  1   |  1   |  1   |  1   |
-------------------------------------
  2   |  3   |  3   |  3   |  1   |
-------------------------------------
  2   |  4   |  4   |  4   |  1   |
-------------------------------------
  2   |  2   |  2   |  2   |  4   |
-------------------------------------
  5   |  5   |  5   |  5   |  5   |

Press any key to continue!
Press 0 to undo!
Selection :
```

Manuel Modda Oyun Bitirme

```
Board
-------------------------------------------
   1    |   1    |   1    |   1    |   1    |
-------------------------------------------
   2    |   3    |   3    |   3    |   1    |
-------------------------------------------
   2    |   4    |   4    |   4    |   4    |
-------------------------------------------
   2    |   2    |   2    |   2    |   4    |
-------------------------------------------
   5    |   5    |   5    |   5    |   5    |

Complete Time : 160.6
Gain Score : 148435.95

Main Menu
1.Read From File Mode
2.Random Write Mode
3.Show Scores of Users
4.Exit
Selection :
```

Matrisin Tekrar Oluşturulması Durumu

```
Board
-----------------------------------------------------------------
   1   |       |       |   4   |       |   2   |
-----------------------------------------------------------------
   2   |   3   |       |   3   |   1   |   2   |
-----------------------------------------------------------------
       |   4   |   5   |       |   4   |       |
-----------------------------------------------------------------
       |   3   |       |   2   |   4   |       |
-----------------------------------------------------------------
   5   |   5   |       |   6   |   5   |   3   |
-----------------------------------------------------------------
   1   |   1   |   6   |       |       |       |

Would you like to use the matrix above[y|n]? :   n

Board
-----------------------------------------------------------------
       |   4   |   1   |       |       |   2   |
-----------------------------------------------------------------
       |       |       |       |       |       |
-----------------------------------------------------------------
       |       |       |       |   3   |       |
-----------------------------------------------------------------
   1   |   6   |       |       |       |       |
-----------------------------------------------------------------
   5   |   4   |   3   |       |       |       |
-----------------------------------------------------------------
       |   2   |       |       |   6   |   5   |
```

Rastgele Matris Oluşturma

```
Main Menu
1.Read From File Mode
2.Random Write Mode
3.Show Scores of Users
4.Exit
Selection : 2
Enter the matrix size(N) = 6

Board
-------------------------------------------------
  1  |     |     |  4  |     |  2  |
-------------------------------------------------
  2  |  3  |     |  3  |  1  |  2  |
-------------------------------------------------
     |  4  |  5  |     |  4  |     |
-------------------------------------------------
     |  3  |     |  2  |  4  |     |
-------------------------------------------------
  5  |  5  |     |  6  |  5  |  3  |
-------------------------------------------------
  1  |  1  |  6  |     |     |     |
```

Skor Tablosu

```
Score Table
        Auto Game Mode
                Matrix Size:            +Size * 40000 Score
                Random Game Mode:       +100 Score
                Read File Mode:         +50 Score
                Undo:                   -0.001 Score
                Time:                   -Second * 10 Score
        Manual Game Mode
                Matrix Size:            +Size * 40000 Score
                Random Game Mode:       +100 Score
                Read File Mode:         +50 Score
                Undo:                   -2 Score
                Time:                   -Second * 10 Score

User yigit:        150031.00 Score
User osman:        148435.00 Score
User a:  0.00 Score
```

Otomatik Mod Karmaşıklığı

DFS Karmaşıklığı(Matrix) : O(N^2)

Manuel Mod Karmaşıklığı

İlk döngü '(count < n+1 || !control)' döngüsü O(N)

isFreePath fonksiyonu O(N)

if-else koşulları O(backCount)

En kötü durumda O(N^2)