PRAKTIKUM ALGORITMA DAN STRUKTUR DATA
TUGAS AKHIR

"QUICK SORT"
(KELAS D)

Oleh :
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UNIVERSITAS MUHAMMADIYAH SURAKARTA
2021

A. Deskripsi Tugas (Topik Quick Sort)

Membuat Program Pengurutan Berdasarkan:

- Huruf Alphabet Dari Kolom Tempat Pertandingan

- Waktu Pertandingan Awal Ke Akhir, Dan Sebaliknya

B. Data yang Diolah

Jadwal Pertandingan Piala Dunia 2018

No	Pertandingan / Match	Tempat / Venue	Waktu / Time
1	Russia – Saudi Arabia	Moskwa Luzhniki	14 June 2018, 22.00
2	Egypt – Uruguay	Yekaterinburg	15 June 2018, 19.00
3	Russia – Egypt	St. Petersburg	20 June 2018, 01.00
4	Uruguay – Saudi Arabia	Rostov-on-Don	20 June 2018, 22.00
5	Arab Saudi – Egypt	Vologorad	25 June 2018, 21.00
6	Uruguay – Russia	Samara	25 June 2018, 21.00
7	Portugal – Spain	Sochi	16 June 2018, 01.00
8	Morocco – Iran	St. Petersburg	15 June 2018, 22.00
9	Portugal – Morocco	Moskwa Luzhniki	20 June 2018, 19.00
10	Iran – Spain	Kazan	21 June 2018, 01.00
11	Spain – Morocco	Kaliningrad	26 June 2018, 01.00
12	Iran – Portugal	Saransk	26 June 2018, 01.00
13	France – Australia	Kazan	16 June 2018, 17.00
14	Peru – Denmark	Saransk	16 June 2018, 23.00
15	France – Peru	Yekaterinburg	21 June 2018, 22.00
16	Denmark – Australia	Samara	21 June 2018, 19.00
17	Denmark – France	Moskwa Luzhniki	26 June 2018, 21.00
18	Australia – Peru	Sochi	26 June 2018, 21.00
19	Argentina – Iceland	Moskwa Spartak	16 June 2018, 20.00
20	Croatia – Nigeria	Kaliningrad	17 June 2018, 02.00
21	Argentina – Croatia	Nizhni Novgorod	22 June 2018, 01.00
22	Nigeria – Iceland	Volgograd	22 June 2018, 22.00
23	Iceland – Croatia	Rostov-on-Don	27 June 2018, 01.00
24	Nigeria – Argentina	St. Petersburg	27 June 2018, 01.00
25	Brazil – Switzerland	Rostov-on-Don	18 June 2018, 01.00
26	Costa Rica – Serbia	Samara	17 June 2018, 19.00

27	Brazil – Costa Rica	St. Petersburg	22 June 2018, 19.00
28	Serbia – Switzerland	Kaliningrad	23 June 2018, 01.00
29	Serbia – Brazil	Moskwa Spartak	28 June 2018, 01.00
30	Switzerland – Costa Rica	Nizhni Novgorod	28 June 2018, 01.00
31	Germany – Mexico	Moskwa Luzhniki	17 June 2018, 22.00
32	Sweden – South Korea	Nizhni Novgorod	18 June 2018, 19.00
33	Germany – Sweden	Sochi	24 June 2018, 01.00
34	South Korea – Mexico	Rostov-on-Don	23 June 2018, 22.00
35	South Korea – Germany	Kazan	27 June 2018, 21.00
36	Mexico – Sweden	Yekaterinburg	27 June 2018, 21.00
37	Belgium – Panama	Sochi	18 June 2018, 22.00
38	Tunisia – England	Volovograd	19 June 2018, 01.00
39	Belgium – Tunisia	Moskwa Spartak	23 June 2018, 19.00
40	England – Panama	Nizhni Novgorod	24 June 2018, 19.00
41	England – Belgium	Kaliningrad	29 June 2018, 01.00
42	Poland – Senegal	Moskwa Spartak	19 June 2018, 22.00
43	Colombia – Japan	Saransk	19 June 2018, 19.00
44	Japan – Senegal	Yekaterinburg	24 June 2018, 22.00
45	Poland – Colombia	Kazan	25 June 2018, 01.00
46	Japan – Poland	Volgograd	28 June 2018, 21.00
47	Senegal – Colombia	Samara	28 June 2018, 21.00

C. Hasil Olah Data

1. File Excel .xlsx yang Berisi Data Diatas

	A	B	C
1	Russia – Saudi Arabia	Moskwa Luzhniki	14 June 2018, 22.00
2	Egypt – Uruguay	Yekaterinburg	15 June 2018, 19.00
3	Russia – Egypt	St. Petersburg	20 June 2018, 01.00
4	Uruguay – Saudi Arabia	Rostov-on-Don	20 June 2018, 22.00
5	Saudi Arabia – Egypt	Vologorad	25 June 2018, 21.00
6	Uruguay – Russia	Samara	25 June 2018, 21.00
7	Portugal – Spain	Sochi	16 June 2018, 01.00
8	Morocco – Iran	St. Petersburg	15 June 2018, 22.00
9	Portugal – Morocco	Moskwa Luzhniki	20 June 2018, 19.00
10	Iran – Spain	Kazan	21 June 2018, 01.00

11	Spain – Morocco	Kaliningrad	26 June 2018, 01.00
12	Iran – Portugal	Saransk	26 June 2018, 01.00
13	France – Australia	Kazan	16 June 2018, 17.00
14	Peru – Denmark	Saransk	16 June 2018, 23.00
15	France – Peru	Yekaterinburg	21 June 2018, 22.00
16	Denmark – Australia	Samara	21 June 2018, 19.00
17	Denmark – France	Moskwa Luzhniki	26 June 2018, 21.00
18	Australia – Peru	Sochi	26 June 2018, 21.00
19	Argentina – Iceland	Moskwa Spartak	16 June 2018, 20.00
20	Croatia – Nigeria	Kaliningrad	17 June 2018, 02.00
21	Argentina – Croatia	Nizhni Novgorod	22 June 2018, 01.00
22	Nigeria – Iceland	Volgograd	22 June 2018, 22.00
23	Iceland – Croatia	Rostov-on-Don	27 June 2018, 01.00
24	Nigeria – Argentina	St. Petersburg	27 June 2018, 01.00
25	Brazil – Switzerland	Rostov-on-Don	18 June 2018, 01.00
26	Costa Rica – Serbia	Samara	17 June 2018, 19.00
27	Brazil – Costa Rica	St. Petersburg	22 June 2018, 19.00
28	Serbia – Switzerland	Kaliningrad	23 June 2018, 01.00
29	Serbia – Brazil	Moskwa Spartak	28 June 2018, 01.00
30	Switzerland – Costa Rica	Nizhni Novgorod	28 June 2018, 01.00
31	Germany – Mexico	Moskwa Luzhniki	17 June 2018, 22.00
32	Sweden – South Korea	Nizhni Novgorod	18 June 2018, 19.00
33	Germany – Sweden	Sochi	24 June 2018, 01.00
34	South Korea – Mexico	Rostov-on-Don	23 June 2018, 22.00
35	South Korea – Germany	Kazan	27 June 2018, 21.00
36	Mexico – Sweden	Yekaterinburg	27 June 2018, 21.00
37	Belgium – Panama	Sochi	18 June 2018, 22.00
38	Tunisia – England	Volovograd	19 June 2018, 01.00
39	Belgium – Tunisia	Moskwa Spartak	23 June 2018, 19.00
40	England – Panama	Nizhni Novgorod	24 June 2018, 19.00
41	England – Belgium	Kaliningrad	29 June 2018, 01.00
42	Poland – Senegal	Moskwa Spartak	19 June 2018, 22.00
43	Colombia – Japan	Saransk	19 June 2018, 19.00
44	Japan – Senegal	Yekaterinburg	24 June 2018, 22.00
45	Poland – Colombia	Kazan	25 June 2018, 01.00
46	Japan – Poland	Volgograd	28 June 2018, 21.00
47	Senegal – Colombia	Samara	28 June 2018, 21.00

2. Import File Excel Ke Dalam Python

Quick Sort Kelompok.py - D:\FKI - INFORMATIKA\INFORMATIKA\TUGAS INFORMATIKA\SEMESTER 4\Algorithms & Data Stucture (RPL)\Praktikum\Tugas Akhir\Quick Sort Kelompok.py (3.9.0)

File Edit Format Run Options Window Help

```python
'''Anggota Kelompok: - Syarifatul Daimahtul Fatiyyah L200190077
                     - Muhammad Nur Taufiq L200190085
'''

from prettytable import PrettyTable
import pandas as pd

data = pd.read_excel(r'./PialaDunia.xlsx', engine='openpyxl')
data_list = data.values.tolist()

while True:
    print("==========Program Quicksort Jadwal Pertandingan Piala Dunia 2018==========")
    print("Ketik 1 = Quicksort huruf alphabet dari kolom tempat pertandingan")
    print("Ketik 2 = Quicksort waktu pertandingan awal ke akhir")
    print("Ketik 3 = Quicksort waktu pertandingan akhir ke awal")
    print("Ketik 0 = menghentikan program\n")
    pilih = int(input("Masukkan angka : "))

    class pil_dun(object):
        def __init__(self, ambil):
            self.match = ambil[0]
            self.venue = ambil[1]
            self.time = ambil[2]

        def getTempat(self):
            return self.venue
        def getWaktu(self):
            return self.time

    tabelPildun = PrettyTable(["Pertandingan/Match", "Tempat/Venue", "Waktu/Time"])
    daftarpildun =[]
    for i in range(len(data_list)):
        daftarpildun.append(pil_dun(data_list[i]))
```

3. Program QuickSort Huruf Alphabet Dari Kolom Tempat Pertandingan

Code

Quick Sort Kelompok.py - D:\FKI - INFORMATIKA\INFORMATIKA\TUGAS INFORMATIKA\SEMESTER 4\Algorithms & Data Stucture (RPL)\Praktikum\Tugas Akhir\Quick Sort Kelompok.py (3.9.0)

File Edit Format Run Options Window Help

```python
    #=====Quicksort huruf alphabet dari kolom tempat pertandingan=====#
    if pilih == 1:
        def quickSort(A):
            quickSortBantu(A, 0, len(A)-1)

        def quickSortBantu(A, awal, akhir):
            if awal < akhir:
                titikBelah = partisi(A, awal, akhir)
                quickSortBantu(A, awal, titikBelah - 1)
                quickSortBantu(A, titikBelah + 1, akhir)

        def partisi(A, awal, akhir):
            nilaiPivot = A[awal].getTempat()
            tanda_Kiri = awal + 1
            tanda_Kanan = akhir

            selesai = False
            while not selesai :
                while tanda_Kiri <= tanda_Kanan and A[tanda_Kiri].getTempat() <= nilaiPivot:
                    tanda_Kiri = tanda_Kiri + 1
                while A[tanda_Kanan].getTempat() >= nilaiPivot and tanda_Kanan >= tanda_Kiri:
                    tanda_Kanan = tanda_Kanan - 1

                if tanda_Kanan < tanda_Kiri:
                    selesai = True
                else:
                    temp = A[tanda_Kiri]
                    A[tanda_Kiri] = A[tanda_Kanan]
                    A[tanda_Kanan] = temp

            temp = A[awal]
            A[awal] = A[tanda_Kanan]
            A[tanda_Kanan] = temp

            return tanda_Kanan

        quickSort(daftarpildun)
        for i in daftarpildun:
            tabelPildun.add_row([i.match, i.venue, i.time])
        print(tabelPildun)
        print("\n")
```

Output


```
+--------------------+------------------+---------------------+
|  Pertandingan/Match | Tempat/Venue    |     Waktu/Time      |
+--------------------+------------------+---------------------+
|  Serbia - Switzerland |  Kaliningrad  | 23 June 2018, 01.00 |
|  Croatia - Nigeria    |  Kaliningrad  | 17 June 2018, 02.00 |
|  Spain - Morocco      |  Kaliningrad  | 26 June 2018, 01.00 |
|  England - Belgium    |  Kaliningrad  | 29 June 2018, 01.00 |
|  Poland - Colombia    |     Kazan     | 25 June 2018, 01.00 |
|  France - Australia   |     Kazan     | 16 June 2018, 17.00 |
|  South Korea - Germany|     Kazan     | 27 June 2018, 21.00 |
|  Iran - Spain         |     Kazan     | 21 June 2018, 01.00 |
|  Portugal - Morocco   | Moskwa Luzhniki| 20 June 2018, 19.00 |
|  Germany - Mexico     | Moskwa Luzhniki| 17 June 2018, 22.00 |
|  Denmark - France     | Moskwa Luzhniki| 26 June 2018, 21.00 |
|  Poland - Senegal     |  Moskwa Spartak| 19 June 2018, 22.00 |
|  Belgium - Tunisia    |  Moskwa Spartak| 23 June 2018, 19.00 |
|  Serbia - Brazil      |  Moskwa Spartak| 28 June 2018, 01.00 |
|  Argentina - Iceland  |  Moskwa Spartak| 16 June 2018, 20.00 |
|  Sweden - South Korea | Nizhni Novgorod| 18 June 2018, 19.00 |
|  Switzerland - Costa Rica | Nizhni Novgorod| 28 June 2018, 01.00 |
|  England - Panama     | Nizhni Novgorod| 24 June 2018, 19.00 |
|  Argentina - Croatia  | Nizhni Novgorod| 22 June 2018, 01.00 |
|  Uruguay - Saudi Arabia| Rostov-on-Don | 20 June 2018, 22.00 |
|  Iceland - Croatia    | Rostov-on-Don | 27 June 2018, 01.00 |
|  South Korea - Mexico | Rostov-on-Don | 23 June 2018, 22.00 |
|  Brazil - Switzerland | Rostov-on-Don | 18 June 2018, 01.00 |
|  Costa Rica - Serbia  |     Samara    | 17 June 2018, 19.00 |
|  Denmark - Australia  |     Samara    | 21 June 2018, 19.00 |
|  Uruguay - Russia     |     Samara    | 25 June 2018, 21.00 |
|  Senegal - Colombia   |     Samara    | 28 June 2018, 21.00 |
|  Iran - Portugal      |    Saransk    | 26 June 2018, 01.00 |
|  Colombia - Japan     |    Saransk    | 19 June 2018, 19.00 |
|  Peru - Denmark       |    Saransk    | 16 June 2018, 23.00 |
|  Germany - Sweden     |     Sochi     | 24 June 2018, 01.00 |
|  Portugal - Spain     |     Sochi     | 16 June 2018, 01.00 |
|  Australia - Peru     |     Sochi     | 26 June 2018, 21.00 |
|  Belgium - Panama     |     Sochi     | 18 June 2018, 22.00 |
|  Nigeria - Argentina  | St. Petersburg| 27 June 2018, 01.00 |
|  Brazil - Costa Rica  | St. Petersburg| 22 June 2018, 19.00 |
|  Russia - Egypt       | St. Petersburg| 20 June 2018, 01.00 |
|  Morocco - Iran       | St. Petersburg| 15 June 2018, 22.00 |
|  Japan - Poland       |   Volgograd   | 28 June 2018, 21.00 |
|  Nigeria - Iceland    |   Volgograd   | 22 June 2018, 22.00 |
|  Saudi Arabia - Egypt |   Vologorad   | 25 June 2018, 21.00 |
|  Tunisia - England    |   Volovograd  | 19 June 2018, 01.00 |
|  France - Peru        |  Yekaterinburg| 21 June 2018, 22.00 |
|  Mexico - Sweden      |  Yekaterinburg| 27 June 2018, 21.00 |
|  Japan - Senegal      |  Yekaterinburg| 24 June 2018, 22.00 |
|  Egypt - Uruguay      |  Yekaterinburg| 15 June 2018, 19.00 |
+--------------------+------------------+---------------------+
```

4. Program Quicksort Waktu Pertandingan Awal Ke Akhir

Code


```python
#=====Quicksort waktu pertandingan awal ke akhir=====#
if pilih == 2:
    def quickSort(A):
        quickSortBantu(A, 0, len(A)-1)

    def quickSortBantu(A, awal, akhir):
        if awal < akhir:
            titikBelah = partisi(A, awal, akhir)
            quickSortBantu(A, awal, titikBelah - 1)
            quickSortBantu(A, titikBelah + 1, akhir)

    def partisi(A, awal, akhir):
        nilaiPivot = A[awal].getWaktu()
        tanda_Kiri = awal + 1
        tanda_Kanan = akhir

        selesai = False
        while not selesai :
            while tanda_Kiri <= tanda_Kanan and A[tanda_Kiri].getWaktu() <= nilaiPivot:
                tanda_Kiri = tanda_Kiri + 1

            while A[tanda_Kanan].getWaktu() >= nilaiPivot and tanda_Kanan >= tanda_Kiri:
                tanda_Kanan = tanda_Kanan - 1

            if tanda_Kanan < tanda_Kiri:
                selesai = True
            else:
                temp = A[tanda_Kiri]
                A[tanda_Kiri] = A[tanda_Kanan]
                A[tanda_Kanan] = temp

        temp = A[awal]
        A[awal] = A[tanda_Kanan]
        A[tanda_Kanan] = temp

        return tanda_Kanan

    quickSort(daftarpildun)
    for i in daftarpildun:
        tabelPildun.add_row([i.match, i.venue, i.time])
    print(tabelPildun)
    print("\n")
```

Output

```
Python 3.9.0 (tags/v3.9.0:9cf6752, Oct  5 2020, 15:34:40) [MSC v.1927 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: D:\FKI - INFORMATIKA\INFORMATIKA\TUGAS INFORMATIKA\SEMESTER 4\Algorithms & Data Stucture (RPL)\Praktikum\Tugas Akhir\Quick Sort Kelompok.py
=========Program Quicksort Jadwal Pertandingan Piala Dunia 2018==========
Ketik 1 = Quicksort huruf alphabet dari kolom tempat pertandingan
Ketik 2 = Quicksort waktu pertandingan awal ke akhir
Ketik 3 = Quicksort waktu pertandingan akhir ke awal
Ketik 0 = menghentikan program

Masukkan angka : 2
```

Pertandingan/Match	Tempat/Venue	Waktu/Time
Egypt - Uruguay	Yekaterinburg	15 June 2018, 19.00
Morocco - Iran	St. Petersburg	15 June 2018, 22.00
Portugal - Spain	Sochi	16 June 2018, 01.00
France - Australia	Kazan	16 June 2018, 17.00
Argentina - Iceland	Moskwa Spartak	16 June 2018, 20.00
Peru - Denmark	Saransk	16 June 2018, 23.00
Croatia - Nigeria	Kaliningrad	17 June 2018, 02.00
Costa Rica - Serbia	Samara	17 June 2018, 19.00
Germany - Mexico	Moskwa Luzhniki	17 June 2018, 22.00
Brazil - Switzerland	Rostov-on-Don	18 June 2018, 01.00
Sweden - South Korea	Nizhni Novgorod	18 June 2018, 19.00
Belgium - Panama	Sochi	18 June 2018, 22.00
Tunisia - England	Volovograd	19 June 2018, 01.00
Colombia - Japan	Saransk	19 June 2018, 19.00
Poland - Senegal	Moskwa Spartak	19 June 2018, 22.00
Russia - Egypt	St. Petersburg	20 June 2018, 01.00
Portugal - Morocco	Moskwa Luzhniki	20 June 2018, 19.00
Uruguay - Saudi Arabia	Rostov-on-Don	20 June 2018, 22.00
Iran - Spain	Kazan	21 June 2018, 01.00
Denmark - Australia	Samara	21 June 2018, 19.00
France - Peru	Yekaterinburg	21 June 2018, 22.00
Argentina - Croatia	Nizhni Novgorod	22 June 2018, 01.00
Brazil - Costa Rica	St. Petersburg	22 June 2018, 19.00
Nigeria - Iceland	Volgograd	22 June 2018, 22.00
Serbia - Switzerland	Kaliningrad	23 June 2018, 01.00
Belgium - Tunisia	Moskwa Spartak	23 June 2018, 19.00
South Korea - Mexico	Rostov-on-Don	23 June 2018, 22.00
Germany - Sweden	Sochi	24 June 2018, 01.00
England - Panama	Nizhni Novgorod	24 June 2018, 19.00
Japan - Senegal	Yekaterinburg	24 June 2018, 22.00
Poland - Colombia	Kazan	25 June 2018, 01.00
Saudi Arabia - Egypt	Vologorad	25 June 2018, 21.00
Uruguay - Russia	Samara	25 June 2018, 21.00
Iran - Portugal	Saransk	26 June 2018, 01.00
Spain - Morocco	Kaliningrad	26 June 2018, 01.00
Denmark - France	Moskwa Luzhniki	26 June 2018, 21.00
Australia - Peru	Sochi	26 June 2018, 21.00
Nigeria - Argentina	St. Petersburg	27 June 2018, 01.00
Iceland - Croatia	Rostov-on-Don	27 June 2018, 01.00
South Korea - Germany	Kazan	27 June 2018, 21.00
Mexico - Sweden	Yekaterinburg	27 June 2018, 21.00
Switzerland - Costa Rica	Nizhni Novgorod	28 June 2018, 01.00
Serbia - Brazil	Moskwa Spartak	28 June 2018, 01.00
Japan - Poland	Volgograd	28 June 2018, 21.00
Senegal - Colombia	Samara	28 June 2018, 21.00
England - Belgium	Kaliningrad	29 June 2018, 01.00

5. Program Quicksort Waktu Pertandingan Akhir Ke Awal

Code

```python
127         #=====Quicksort waktu pertandingan akhir ke awal=====#
128     if pilih == 3:
129             def quickSort(A):
130                 def quickSortBantu(A, awal, akhir):
131                     if awal < akhir:
132                         titikBelah = partisi(A, awal, akhir)
133                         quickSortBantu(A, awal, titikBelah)
134                         quickSortBantu(A, titikBelah + 1, akhir)
135                 quickSortBantu(A, 0, len(A)-1)
136
137             def partisi(A, awal, akhir):
138                 nilaiPivot = A[awal].getWaktu()
139                 tanda_Kiri = awal - 1
140                 tanda_Kanan = akhir + 1
141
142                 selesai = False
143                 while not selesai :
144                     tanda_Kiri += 1
145                     while A[tanda_Kiri].getWaktu() > nilaiPivot:
146                         tanda_Kiri += 1
147                     tanda_Kanan -= 1
148
149                     while A[tanda_Kanan].getWaktu() < nilaiPivot:
150                         tanda_Kanan -= 1
151                     if tanda_Kiri >= tanda_Kanan:
152                         return tanda_Kanan
153                     A[tanda_Kiri], A[tanda_Kanan] = A[tanda_Kanan], A[tanda_Kiri]
154
155
156             quickSort(daftarpildun)
157             for i in daftarpildun:
158                 tabelPildun.add_row([i.match, i.venue, i.time])
159             print(tabelPildun)
160             print("\n")
161
162
163     if pilih == 0 :
164         break
```

```
Python 3.9.0 (tags/v3.9.0:9cf6752, Oct  5 2020, 15:34:40) [MSC v.1927 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: D:\FKI - INFORMATIKA\INFORMATIKA\TUGAS INFORMATIKA\SEMESTER 4\Algorithms & Data Stucture (RPL)\Praktikum\Tugas Akhir\Quick Sort Kelompok.py
==========Program Quicksort Jadwal Pertandingan Piala Dunia 2018==========
Ketik 1 = Quicksort huruf alphabet dari kolom tempat pertandingan
Ketik 2 = Quicksort waktu pertandingan awal ke akhir
Ketik 3 = Quicksort waktu pertandingan akhir ke awal
Ketik 0 = menghentikan program

Masukkan angka : 3
```

Pertandingan/Match	Tempat/Venue	Waktu/Time
England – Belgium	Kaliningrad	29 June 2018, 01.00
Japan – Poland	Volgograd	28 June 2018, 21.00
Senegal – Colombia	Samara	28 June 2018, 21.00
Switzerland – Costa Rica	Nizhni Novgorod	28 June 2018, 01.00
Serbia – Brazil	Moskwa Spartak	28 June 2018, 01.00
South Korea – Germany	Kazan	27 June 2018, 21.00
Mexico – Sweden	Yekaterinburg	27 June 2018, 21.00
Nigeria – Argentina	St. Petersburg	27 June 2018, 01.00
Iceland – Croatia	Rostov-on-Don	27 June 2018, 01.00
Denmark – France	Moskwa Luzhniki	26 June 2018, 21.00
Australia – Peru	Sochi	26 June 2018, 21.00
Spain – Morocco	Kaliningrad	26 June 2018, 01.00
Iran – Portugal	Saransk	26 June 2018, 01.00
Uruguay – Russia	Samara	25 June 2018, 21.00
Saudi Arabia – Egypt	Vologorad	25 June 2018, 21.00
Poland – Colombia	Kazan	25 June 2018, 01.00
Japan – Senegal	Yekaterinburg	24 June 2018, 22.00
England – Panama	Nizhni Novgorod	24 June 2018, 19.00
Germany – Sweden	Sochi	24 June 2018, 01.00
South Korea – Mexico	Rostov-on-Don	23 June 2018, 22.00
Belgium – Tunisia	Moskwa Spartak	23 June 2018, 19.00
Serbia – Switzerland	Kaliningrad	23 June 2018, 01.00
Nigeria – Iceland	Volgograd	22 June 2018, 22.00
Brazil – Costa Rica	St. Petersburg	22 June 2018, 19.00
Argentina – Croatia	Nizhni Novgorod	22 June 2018, 01.00
France – Peru	Yekaterinburg	21 June 2018, 22.00
Denmark – Australia	Samara	21 June 2018, 19.00
Iran – Spain	Kazan	21 June 2018, 01.00
Uruguay – Saudi Arabia	Rostov-on-Don	20 June 2018, 22.00
Portugal – Morocco	Moskwa Luzhniki	20 June 2018, 19.00
Russia – Egypt	St. Petersburg	20 June 2018, 01.00
Poland – Senegal	Moskwa Spartak	19 June 2018, 22.00
Colombia – Japan	Saransk	19 June 2018, 19.00
Tunisia – England	Volovograd	19 June 2018, 01.00
Belgium – Panama	Sochi	18 June 2018, 22.00
Sweden – South Korea	Nizhni Novgorod	18 June 2018, 19.00
Brazil – Switzerland	Rostov-on-Don	18 June 2018, 01.00
Germany – Mexico	Moskwa Luzhniki	17 June 2018, 22.00
Costa Rica – Serbia	Samara	17 June 2018, 19.00
Croatia – Nigeria	Kaliningrad	17 June 2018, 02.00
Peru – Denmark	Saransk	16 June 2018, 23.00
Argentina – Iceland	Moskwa Spartak	16 June 2018, 20.00
France – Australia	Kazan	16 June 2018, 17.00
Portugal – Spain	Sochi	16 June 2018, 01.00
Morocco – Iran	St. Petersburg	15 June 2018, 22.00
Egypt – Uruguay	Yekaterinburg	15 June 2018, 19.00

6. Menghentikan Program


```
==========Program Quicksort Jadwal Pertandingan Piala Dunia 2018==========
Ketik 1 = Quicksort huruf alphabet dari kolom tempat pertandingan
Ketik 2 = Quicksort waktu pertandingan awal ke akhir
Ketik 3 = Quicksort waktu pertandingan akhir ke awal
Ketik 0 = menghentikan program

Masukkan angka : 0
>>>
```